and it satisfies y"(2t - y') = y' (2.4). For the Mach cone,

$$F = W_1 + \lambda^{1/2}\psi^{1/2}\frac{W_1}{\gamma+1}\frac{m_1^4}{M_1^4}\frac{8\sqrt{3}}{9}\times \times\left\{(r_1-r)^{3/2}+\frac{9}{20}m_1\left[1+\frac{\psi'^2-2\psi\psi''}{9\psi^2}\right](r_1-r)^{5/2}+\ldots\right\}+O(\lambda) \quad (3.3)$$

(3.3).

$$w = W_1 + \lambda^{1/2}\psi^{1/2}\frac{W_1}{\gamma+1}\frac{m_1^{5/2}}{M_1^4}\frac{4\sqrt{3}}{9}\times \times\left\{(r_1-r)^{1/2}+\frac{5\psi^2+\psi'^2-2\psi\psi''}{12\psi^2}(r_1-r)^{3/2}+\ldots\right\}+O(\lambda) \quad (3.4)$$

(3.4).

$$\left(\psi^{1/2}(0,\lambda)=\frac{3}{2\sqrt{2c}}\varphi^{1/2}(0,\lambda)\right)$$

are obtained. If they are convergent for small but finite values of $(r_1 - r)^{1/2}$ and represent linear solution in the "inner" part of flow, then on formal analytic continuation to $r = r_1$ it can be expanded into a series in $(r_1 - r)^{1/2}$, hence near the Mach cone

$$w = W_1 + [-c_0\sqrt{2} + \sum 2\sqrt{2n}(c_{n1}\cos n\theta + c_{n2}\sin n\theta)] \times$$
$$\times \left\{(r_1 - r)^{1/2} + \frac{-5c_0 + \sum 2n(5+4n^2)(c_{n1}\cos n\theta + c_{n2}\sin n\theta)}{12[-c_0 + \sum 2n(c_{n1}\cos n\theta + c_{n2}\sin n\theta)]}(r_1 - r)^{3/2} + \dots\right\} \quad (3.5)$$
$$(n = 1, 2, \dots, \infty) \quad (3.5)$$

follows. From Eq. (3.5) and (3.3), and (3.5) and

$$w = W_1 - \lambda^{1/2}\varphi^{1/2}\frac{W_1}{\gamma+1}\frac{m_1^{1/2}}{M_1^4}\frac{4\sqrt{3}}{9} \times$$
$$\times \left\{(r_1 - r)^{1/2} + \frac{5\varphi^2 + \varphi'^2 - 2\varphi\varphi''}{12\varphi^2}(r_1 - r)^{3/2} + \dots\right\} + O(\lambda) \quad (3.2)$$

$$\frac{5\varphi^2 + \varphi'^2 - 2\varphi\varphi''}{\varphi^2} = \frac{-5c_0 + \sum 2n(5+4n^2)(c_{n1}\cos n\theta + c_{n2}\sin n\theta)}{-c_0 + \sum 2n(c_{n1}\cos n\theta + c_{n2}\sin n\theta)} \; (n=1, \dots, \infty) \quad (3.7)$$

follows with similar expressions for ψ. Hence

Card 5/9

$$F = W_1 - \lambda^{1/2} \varphi^{1/2} \frac{W_1}{\gamma + 1} \frac{m_1^4}{M_1^4} \frac{8\sqrt{3}}{9} \Big\{ (r_1 - r)^{3/2} + \frac{9}{20} m_1 \Big[1 + \frac{\varphi'^2 - 2\varphi\varphi''}{9\varphi^2} \Big] (r_1 - r)^{5/2} + \ldots \Big\} + O(\lambda) \tag{3.1}$$

and (3.3) represent F for small, but finite $(r_1 - r)^{1/2}$ and it follows that the linear theory gives the correct result for F and turbulent velocities inside the Mach cone.

$$F = W_1 + \lambda^{1/2}\Big[\frac{a_1}{\varphi^{3/2}}(r_1 - r)^{3/2} + \frac{b_1}{\varphi^{5/2}}(r_1 - r)^{5/2} + \ldots \Big] + \lambda\Big[\frac{a_2}{\varphi}(r_1 - r) + \ldots\Big] + \lambda^{3/2}\ln\lambda\Big[-\frac{b_3}{\varphi^{3/2}}(r_1 - r)^{3/2} + \ldots\Big] + \lambda^{3/2}\Big[\frac{a_3}{\varphi^{1/2}}(r_1 - r)^{1/2} + \ldots\Big] + \lambda^2[a_4 + \ldots] + \lambda^{5/2}[a_5\varphi^{1/2}(r_1 - r)^{-1/2} + \ldots] + \ldots \tag{3.9}$$

Card 6/9

26736

On some properties of supersonic ... S/040/61/025/003/013/026
D208/D304

is then obtained, where the coefficients $a_k(\theta, \lambda)$ and $b_k(\theta, \lambda)$ can in turn be expanded in λ and $\ln\lambda$. It follows from Eq. (3.9) that on the formal analytic continuation of each term to the Mach cone ($r = r_1$) turbulent velocity potential ($F - W_1$) becomes zero for $r = r_1$ up to the $O(\lambda^2)$. Terms of the higher order than λ^2 become infinite on $r \longrightarrow r_1$. This means that a series in powers of $\lambda^{1/2}$ and $\ln\lambda$ representing $F - W_1$ in the "inner" part of the flow should on analytic continuation to $r = r_1$ become equal to zero for the terms up to $O(\lambda^2)$. Higher terms become infinite on $r \longrightarrow r_1$. If the solution of the linearized problem is assumed to be known with the potential and turbulent velocities equal to zero at r = r, the n near $r = r_1$ such a solution can be represented by

$$F = W_1\left[1 - \frac{2}{3} m_1^{1/2} A(\theta)(r_1 - r)^{3/2} + \ldots\right] \qquad (4.1)$$

Card 7/9

The author also investigated the influence of vorticity of the flow on the velocity components in the boundary layer and on its surface, starting from the complete system of equations for 3 velocity components and entropy, and found that the influence of entropy on the velocity components in the boundary layer appears in the terms of order $O(\lambda^4)$ and on its surface in $O(\lambda^3)$ where $\lambda = \varepsilon^4$ for elongated solids of the thickness, $\lambda = \delta^2$ for thin solids where δ - angle of attack. Entropy within the flow of the order $O(\lambda^3)$. On investigating the boundary layer for a circular cone at the zero angle of attack, it was found that while the boundary layer was not clearly defined in the "middle" part of flow, it became so defined near the shock wave. Practical conclusions are that if higher order approximations are sought in solving a flow around conical bodies, then the turbulent velocity potentials could appear as a parametric series, whose each term would be equal to zero on the Mach cone up to $O(\varepsilon^8)$ terms for elongated solids and up to $O(\delta^4)$ for thin solids (where ε = respective thickness, δ = angle of attack or other suitable parameter). There are grounds for assuming

26736
S/040/61/025/003/013/026
D208/D304

On some properties of supersonic ...

that this result will hold in the general case of flow around solids wholly within the Mach cone, constructed for a smooth homogeneous supersonic gas flow. There are 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: M.D. Van Dyke, First and Second Order Theory of Supersonic Flow past Bodies of Revolutions J.A.S., 1951, v. 18, no. 3; I.B. Broderick, Supersonic Flow past Round Pointed Bodies of Revolution. Qart. J. Mech. Appl. Math. 1949, v. 2; F.K. Moore, Second Approximation to Supersonic Conical Flows, J.A.S., 1950, v. 17, no. 6; M.J. Lighthill, The Shock Strength in Supersonic Conical Flows, Phil. Mag., 1949, v. 40, sevenths. no. 311.

SUBMITTED: February 20, 1961

X

Card 9/9

17.4200

S/040/62/026/002/011/025
D299/D301

AUTHOR: Bulakh, B.M. (Saratov)

TITLE: Supersonic flow past a yawing circular cone

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 2, 1962, 300 - 307

TEXT: The theory of A.H. Stone, as developed in the references by A. Ferri and J. Willett, is verified analytically. Stone's solution to the problem of hypersonic flow past a cone at angle of attack α, is in the form of power series in α, up to terms $O(\alpha^2)$. It is shown that outside a vortex layer of thickness $O(\alpha)$, the solution is represented by Stone's expansion; this solution is the analytic continuation of Stone's solution inside the vortex layer. Thus, a solution is obtained, with an accuracy $O(\alpha)$, for the entire region between the cone surface and the shock wave. The obtained solution is

$$w = \alpha \frac{a_0^{x2} p_1^x}{\gamma u_0^x \sin\beta} \sin\varphi + O[\alpha(\theta - \beta)^{1/2}] + o(\alpha). \qquad (6.4)$$

Card 1/3

Supersonic flow past a yawing ... S/040/62/026/002/011/025 D299/D301

The appearance of logarithmic singularities in Stone's theory is related to the truncation of the series in α; if all the terms in α^n are taken into account, the singularities do not appear. The behavior of the line of constant entropy in the obtained solution, corresponds to Ferri's analysis. Stone's boundary conditions on the cone surface v = 0 ($V_1 = V_2 = V_3 = 0$, $\theta = \beta$), are verified. Further, it is shown that Stone's theory determines accurately (to within $O(\alpha^2)$) the pressure at the cone surface. As all the assumptions of Willett have been analytically verified, his formulas determine the velocity components at the cone surface to an accuracy $O(\alpha^2)$. There are 1 figure and 7 non-Soviet-bloc references. The 4 most recent references to the English-language publications read as follows: A.H. Stone. On Supersonic Flow Past a Slightly Yawing Cone. II, Jour. Math. and Phys., January 1952, v. 30, no. 4, 200-213; A.H. Stone. Corrections to the Paper "On Supersonic Flow Past a Slightly Yawing Cone. II". Jour. Math. and Phys., January, 1953, v. 31, no. 4, 300; A. Ferri. Supersonic Flow Around Circular Cones at Angles of Attack, NACA Report, 1951, no. 1045; J.E. Willett, Supersonic Flow at the Surface of a Circular Cone at Angle of Attack, Jour.

Card 2/3

Supersonic flow past a yawing ... S/040/62/026/002/011/025
D299/D301

Aero/Sp. Sci., December, 1960, v. 27, no. 12, 907-912, 920.

SUBMITTED: November 21, 1961

Card 3/3

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307420006-9"

BULAKH, B.M. (Saratov)

Asymmetrical hypersonic flow past a circular cone. Prikl. mat. i mekh. 26 no.5:973-976 S-O '62. (MIRA 15:9)
(Aerodynamics, Hypersonic)

ACCESSION NR: AP4040582 S/0040/64/028/003/0548/0553

AUTHOR: Bulakh, B. M. (Saratov)

TITLE: Higher approximations in boundary layer theory

SOURCE: Prikladnaya matematika i mekhanika, v. 28, no. 3, 1964, 548-553

TOPIC TAGS: boundary layer theory, laminar flow, viscous incompressible fluid, Reynolds number, diffuser, asymptotic power series, constant kinematic coefficient, perturbation method

ABSTRACT: The author extends work by M. Van Dyke (Higher approximations in boundary-layer theory, parts 1, 2. J. Fluid Mech., 1962, v. 4, parts 2, 4, pp. 161-177, 481-495) who used interior and exterior expansions in powers of $\varepsilon = R^{-1/2}$ for finding nonseparating laminar flow of viscous incompressible fluid with large Reynolds number R near a semi-infinite body. The author studies terms of higher orders, where Van Dyke considered the first two terms of these expansions. He shows that the exterior solution for such problems consists of a part which is an asymptotic power series in ε and a part which is not such a series (it is $O(e^{-a/\varepsilon})$,

ACCESSION NR: AP4040582

$a > 0$), by investigating casos of flow in a diffuser near a drag point, etc. He shows that the basic part of the solution, in the case of flow in a diffuser, is a series in powers of ε and can be obtained independently of the exponential part. This latter can be found by the method of perturbations. He proposes a method suited to the problem of flow about bodies with large R which consists of combining exterior and interior solutions. "The author thanks S. V. Fal'kovich for his discussions of the given problems." Orig. art. has: 35 formulas and 1 illustration.

ASSOCIATION: none

SUBMITTED: 18Jan64 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: ME NO REF SOV: 002 OTHER: 002

L 16026-65 EWT(1)/EWP(m)/EWT(m)/EWG(v)/FCS(k) Pd-1/Pe-5 SSD(b)/AEDC(a)/SSD/ESD/AFWL/ASD(f)-2/ASD(p)-3/AFETR/AFTC(a)/ESD(gs)/ESD(t) WW/RM

ACCESSION NR: AP5000271 S/0040/64/028/006/1008/1014

AUTHOR: Bulakh, B. M. (Saratov)

TITLE: On the theory of hypersonic viscous gas flow over a blunt-nosed body

SOURCE: Prikladnaya matematika i mechanika, v. 28, no. 6, 1964, 1008-1014

TOPIC TAGS: hypersonic flow, viscous gas flow, boundary layer, boundary layer theory, shock wave, bow shock wave

ABSTRACT: Viscous, uniform, plane, hypersonic gas flow over axisymmetrical blunt-nosed bodies is considered in which the usual boundary layer theory is insufficient and higher-order approximations to the solutions of Navier-Stokes equations are needed. The boundary conditions on the bow shock wave are established to the second approximation by using the known technique of "outer" and "inner" expansions. Some boundary-value problems which arise in determining the second approximation, that is, flow in transonic region and inviscid flow, are analyzed. Orig. art. has: 3 figures and 24 formulas.

Card 1/2

L 16026-65

ACCESSION NR: AP5000271

ASSOCIATION: none

SUBMITTED: 25Apr64 ENCL: 00 SUB CODE: ME

NO REF SOV: 001 OTHER: 003 ATD PRESS: 3142

Card 2/2

L 00571-66 EWP(m)/EWA(c)/EWT(1)/FCS(k) WW

ACCESSION NR: AR5019355 UR/0124/65/000/007/B036/B036

SOURCE: Ref. zh. Mekhanika, Abs. 7B258

36
16

AUTHOR: Bulakh, B. M.

TITLE: Transonic characteristics of a hypersonic gas flow past blunt bodies

CITED SOURCE: Sb. Transzvuk. techeniya gaza. Saratov, Saratovsk. un-t, 1964, 151-163

TOPIC TAGS: hypersonic gas flow, axisymmetric blunt body, transonic region, blunt body flow

TRANSLATION: The report considers a hypersonic flow of ideal nonviscous gas flowing past an axisymmetric blunted body at a zero angle-of-attack. The solution is sought in the tran - sonic region bounded by a shock wave, by the axis of symmetry, the body, and the limit curve. This region is divided into three subregions: the first includes the flow near the shock around the axis of symmetry; the second covers the flow near the surface of the body; and the third includes the remainder of the region. The solution relative to each subregion is presented through power expansion by $\varepsilon=(\gamma-1)/(\gamma+1)$, where γ is the adiabatic exponent. The individual solutions are then combined. A series of higher terms are obtained in addi-

Card 1/2

L 00571-66

ACCESSION NR: AR5019355

tion to the initial expansion terms. The solution derived is used to define the travel of the shock wave, as well as positions of the sonic point on the shock wave and on the body. Convergence of the series derived is not considered in the report, but the results obtained coincide with results produced by other approximate approaches, experimentally or by numerical calculation. A. V. Shipilin

SUB CODE: ME ENCL: 00

Card 2/2

L 17834-66 EWP(m)/EWA(h)/EWT(1)EWA(d)/EWA(1) WW

ACC NR: AP6004079 SOURCE CODE: UR/0040/65/029/005/0969/0972

AUTHOR: Bulakh, B. M. (Leningrad)

ORG: none

66

1,44,55 1,55

TITLE: Shock waves in conical flows

B

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 5, 1965, 969-972

TOPIC TAGS: shock wave, gas dynamics, inviscid flow, conic flow, supersonic flow

ABSTRACT: The shock structure at the apex of a triangle placed in a uniform flow at an angle of attack δ is investigated. The gas is assumed to be inviscid with a velocity W_1 and Mach number M_1. From symmetry considerations the flow in the vicinity of the triangle apex is mapped on a $\xi\eta$-plane for $\xi > 0$ ($\xi = x/z$, $\eta = y/z$) (see Fig. 1). Here the wing (triangle) is depicted by the cut 0-3, the Mach cone of the unperturbed flow by the arc 1-2 and the straight line 2-3. The region 3-4-5-6-3 corresponds to the Prandtl-Meyer expansion at the triangle edge followed by a uniform flow adjacent to the wing. It is shown that the flow in the region 0-1-2-6-5-4-0 can be obtained in power series of δ for small δ. This gives for

Card 1/2

2

L 17834-66

ACC NR: AP6004079

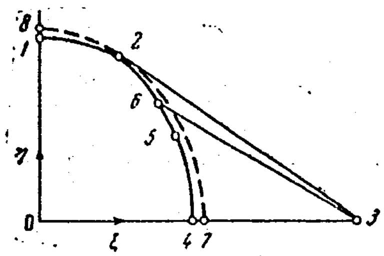

Fig. 1.

the velocity field

$$w = W_1\left\{1 + \delta\left[\frac{2\sqrt{6}}{3}\frac{m_1^{8/3}}{(\gamma+1)M_1^4}\psi_0^{1/3}(\theta)(1-\alpha)+\ldots\right]+O(\delta^2)\right\}$$

$$w = W_1\left\{1 + \delta\left[\frac{W_{11}}{W_1}-\frac{2\sqrt{6}}{3}\frac{m_1^{8/3}}{(\gamma+1)M_1^4}\varphi_0^{1/3}(\theta)(1-\alpha)+\ldots\right]+O(\delta^2)\right\},$$

which shows that the existence of a shock wave calculated from the exact theory can be predicted by using a linearized theory. Orig. art. has: 17 equations and 3 figures.

SUB CODE: 20/ SUBM DATE: 19Dec63/ ORIG REF: 007/ OTH REF: 001

Card 2/2 nst

L 30377-66 EWP(m)/EWT(1) WW

ACC NR: AP6012552 SOURCE CODE: UR/0040/66/030/002/0353/0356

AUTHOR: Bulakh, B. M. (Leningrad)

67
B

ORG: none

TITLE: Conditions on the bow shock of viscous gas flowing around a blunt body

SOURCE: Prikladnaya matematika i mekhanika, v. 30, no. 2, 1966, 353-356

TOPIC TAGS: shock wave, viscous flow, blunt body, Navier Stokes equation, Reynolds number, asymptotic expansion, GAS FLOW, BOUNDARY LAYER, FLOW FIELD

ABSTRACT: The flow field around a blunt body in supersonic low density gas flow is analyzed. The bow shock is assumed to be diffuse, and a large boundary layer is assumed to exist on the body. The viscous flow parameter is defined by

$$\varepsilon = \left[\frac{\mu(U_\infty^2 c_p^{-1})}{\rho_\infty U_\infty a}\right]^{1/2} \qquad \left(\begin{array}{l}\mu = \mathrm{const}\\ \varepsilon = R_\infty^{-1/2}\end{array}\right),$$

and the analysis is presented in the framework of asymptotic expansions of the Navier-Stokes equations, or

$$f = F_0(s, n) + \varepsilon F_1(s, n) + \ldots$$

Here f represents the flow parameters p, ρ, u, v, T, and n and s are the curvilinear coordinates on the body. The case of inner and outer expansions is discussed, and for the former the expansion parameter is given by $N = n\varepsilon^{-2}$. Under the most general

Card 1/2

0

prerequisites the following three relations are derived on the shock

$$\left.\frac{\partial f}{\partial s}\right|_n = \left.\frac{\partial f}{\partial s}\right|_N - \frac{1}{\varepsilon}\varphi'\frac{\partial f}{\partial N}\left(\varphi' = \frac{d\varphi}{ds}\right),$$

$$\{\rho_0 v_0\} = 0, \quad \{u_0\} = 0, \quad \{\rho_0 v_0^2 + p_0\} = 0, \quad \left\{\frac{v_0^2}{2} + \frac{\gamma}{\gamma - 1}\frac{p_0}{\rho_0}\right\} = 0, \quad \gamma = \frac{c_p}{c_v}$$

$$\{\rho_0 v_1 + \rho_1 v_0 - \varphi_0' u_0 \rho_0\} = 0, \quad \{u_1 + v_0\varphi_0'\} = 0 \left\{\frac{\gamma}{\gamma - 1}\left(\frac{p_1}{\rho_0} - \frac{p_0}{\rho_0^2}\rho_1\right) + v_0(v_1 - u_0\varphi_0')\right\} = 0$$

$$\{2\rho_0 v_0 v_1 + \rho_1 v_0^2 + p_1\} = 0, \quad \varphi_0' = d\varphi_0/ds,$$

and

$$\frac{p_1}{p_0} = \gamma\frac{\rho_1}{\rho_0}, \quad p_1 = -(v_1 \sin\theta + u_1 \cos\theta).$$

These are then discussed under the following three assumptions: 1) $n = -0$, $u_1 = v_1 = 0$; 2) $\varphi_0 = 0$, and 3) for $n = -0$

$$u_1 = F_1(\varphi_0, \varphi'_0, \ldots), \quad v_1 = F_2(\varphi_0, \varphi'_0, \ldots).$$

Orig. art. has: 9 equations and 1 figure.

SUB CODE: 20, 12/ SUBM DATE: 25Feb65/ ORIG REF: 001/ OTH REF: 002

L 43663-66 EWT(1)/EWP(m) WW

ACC NR: AP6022531 SOURCE CODE: UR/0040/66/030/003/0607/0612

59

B

AUTHOR: Bulakh, B. M. (Leningrad)

ORG: none

TITLE: Supersonic flow of a viscous gas in the neighborhood of a weak discontinuity

SOURCE: Prikladnaya matematika i mekhanika, v. 30, no. 3, 1966, 607-612

TOPIC TAGS: supersonic flow, compressible flow, gas flow, boundary layer theory, parabolic equation, GAS VISCOSITY, SHOCK WAVE

ABSTRACT: The plane problem of the motion of a gas across a rectilinear discontinuity of accelerations is studied. It is shown that if the viscosity of the gas in the neighborhood of the weak break is taken into account, a boundary layer is formed of thickness $O(\varepsilon)$. The movement of gas in this boundary layer is described by a quasi-linear parabolic equation of the second order. This movement, in contrast to that of gas moving across a strong discontinuity (shock wave), has an essentially non-one-dimensional character. It is shown that in crossing a line of weak discontinuity the terms of $O(\varepsilon)$ in parameters of the gas undergo a break just as do the terms of $O(1)$ in the case of a shock wave. Formulas are derived to express these discontinuities. Orig. art. has: 41 formulas.

SUB CODE: 12, 20/ SUBM DATE: 16Dec65/ ORIG REF: 001/ OTH REF: 002

Card 1/1 JS

BULAKH, D.I., CHISNIKOV, K.A.

Diagram for the cutoff of the electric drive of an idling machine tool. Sudostroenie no.7:60 Jl '60. (MIRA 13:7)
(Cutting machines--Electric driving)

124-57-1-1123

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 155 (USSR)

AUTHOR: Bulakh, G. D.

TITLE: Evaluation of the Stresses From the Overall Deflection of a Vessel Without Reduction (Vychisleniye napryazheniy ot obshchego izgiba sudna bez primeneniya redutsirovaniya)

PERIODICAL: Nauchn. tr. Odessk. in-ta inzh. mor. flota, 1954 (1955), Nr 11, pp 60-68

ABSTRACT: The author proposed a novel method for the determination of the stresses from the overall deflection of a vessel without recurring to the well-known device of the reduction of the area of the transverse cross section of the structural connections that constitute the equivalent truss. For that purpose a preliminary graph is plotted for the variation of the overall bending moment as a function of the stresses, which affords a means for the investigation of the entire process of the change in the stresses state of the hull and which clarifies the question on the values of the external moment at which the various elastic connections fail. The method provides for the consideration, in the

Card 1/2

124-57-1-1123

Evaluation of the Stresses (cont.)

calculation of the overall strength (of the hull, Transl. Ed.), of the effect of the catenary stresses in the plates, provided the latter are found to be sufficiently elastic. The construction of the graph commences with the usual determination of the moment of inertia of the equivalent truss (all connections being considered rigid) and of the neutral axis. The author assigns the values of the Euler stresses for the elastic connections of the deck and the bottom and then proceeds to determine the magnitude of the bending moment at which that elastic connection in the deck or the bottom fails which has the least value of the Euler stress, and also to find the magnitudes of the fiber stresses at the rigid connections of the deck and the bottom which are most distant from the neutral axis. Having obtained the values of the bending moment and the fiber stresses on the graph a first-try construction is made for the changes in fiber stresses of the rigid deck and bottom connections. In the further construction of the graph the weakening of the section is accounted for through the successive elimination of those connections which are assumed to have failed and through additional loads transferred to all those elastic and rigid connections which have not as yet failed From the graph thus constructed is is possible to judge the necessity of strengthening or weakening the various connection elements.

Card 2/2 1. Ship hulls--Stresses--Mathematical analysis

B. I. Slepov

BULAKH, G.D., kand.tekhn.nauk, dotsent

Warping round concrete paving flags. Nauch.trudy OIIMF no.13: 13-21 '57. (MIRA 11:11)

(Pavements, Concrete)

BULAKH, G.D., kand.tekhn.nauk, dotsent

Focal temperature stresses on shells of reinforced concrete ships resulting from daily variations in the air temperature. Nauch.trudy OIIMF no.16:52-62 '58. (MIRA 11:11)
(Ships, Concrete) (Atmospheric temperature)

SIVERTSEV, Ivan Nikolayevich, prof., doktor tekhn.nauk; BULAKH, G.D., dotsent, retsenzent; TRYANIN, I.I., dotsent, red.; VINOGRADOVA, N.M., red.izd-va; YERMAKOVA, T.T., tekhn.red.

[Building ships of reinforced concrete] Zhelezobetonnoe sudostroenie. Izd.3, perer. i dop. Moskva, Izd-vo "Rechnoi transport," 1959. 290 p. (MIRA 13:2)
(Ships, Concrete) (Shipbuilding)

YEGOROV, Nikolay Mikhaylovich, dots., kand. tekhn. nauk; KOZHEVNIKOV, V.G., retsenzent; BULAKH, G.D., retsenzent; YEFREMOV, G.V., red.; VITASHKINA, S.A., red. izd-va; BODROVA, V.A., tekhn. red.

[Technology of building reinforced concrete ships] Tekhnologiia postroiki zhelezobetonnykh sudov. Moskva, Izd-vo "Rechnoi transport," 1961. 191 p. (MIRA 14:9)
(Shipbuilding) (Ships, Concrete)

BULAKH, G.D.

Approximate calculation of a square concrete facing slab. Gidrotekhnika no.1:52-55 '61. (MIRA 15:3)

BULAKH, G.D.; BAYDAK, Ye.N.

Approximate calculations for a beam on an elastic foundation of varying rigidity. Gidrotekhnika no.2:11-16 '62. (MIRA 16:5)
(Beams and girders)

SIVERTSEV, Ivan Nikolayevich, doktor tekhn.nauk, prof.; BULAKH, G.D.,dotsent, retsenzent; RYBALOV, I.I., red.; VITASHKINA, S.A., ~~red. Izd-va~~; KALMYKOVA, V.M., tekhn. red.

[Design and equipment of ships for inland navigation] Konstruktsiia i ustroistvo sudov vnutrennego plavaniia. Moskva, Izd-vo "Rechnoi transport." Pt.3 [Reinforced concrete vessels] Zhelezobetonnye suda. 1963. 170 p. (MIRA 16:6)

(Ships, Concrete)

BULAKH, G.D.; KOBYAKOV, V.M.

Effect of the temperature on the general flexure of reinforced concrete floating docks. Sudorem. i sudostr. no.2:147-153 '63. (MIRA 17:4)

1. Odesskiy institut inzhenerov morskogo flota.

AT7004019 (N) SOURCE CODE: UR/3239/66/000/002/0130/0134

AUTHOR: Bulakh, G. D.

ORG: None

TITLE: On hull durability in reinforced concrete floating docks

SOURCE: Nikolayev. Korablestroitel'nyy institut. Sudostroyeniye i morskiye sooruzheniya, no. 2, 1966. Sudostroyeniye (Shipbuilding), 130-134

TOPIC TAGS: marine engineering, floating dry dock, reinforced concrete

ABSTRACT: The article is a report on reinforced concrete floating docks in use on the Baltic, Black and North Seas to determine the durability of reinforced concrete in this special application. An investigation of nine such docks showed concrete quality and structural strength higher than the theoretically predicted values. The overall condition of the hull in all docks was satisfactory, permitting normal operation. Among the elements requiring repair in some units were worn support decks with reinforcing rods laid bare in some places. Docks built before the Second World War were generally in better shape than those constructed after the war due to the higher quality of concrete used in the former cases. A dock sunk near Sukhumi ... were also inspected. The results showed the concrete at water line ... condition in spite of 20 years exposure to the action of the ...

Card 1/2

BULAKH, G. I.

Bulakh, G. I. - "Potential gravitational field of an infinitely elongated parabolic cylinder," Izvestiya Dnepropetr. gornogo in-ta, Vol. XIX, 1948, p. 79-84

SO: U-3600, 10 July 53, (Letopis 'Zhurnal 'nykh Statey, No.6, 1949).

BULAKH, G. I.

"Matching the Parameters of Turbodrill Operation," Neft. Khoz., No.3, 1955

Translation D 372406

BULAKH, G.I.

AID P - 1765

Subject : USSR/Mining

Card 1/1 Pub. 78 - 3/26

Author : Bulakh, G. I.

Title : Complex characteristics of the turbo-drilling process

Periodical : Neft. khoz., v.33, no.3, 14-20, Mr 1955

Abstract : For a correct appraisal of the possible efficiency of turbo-drilling, an analysis is made of the performance characteristics of a turbo-drill with a given quantity of drilling fluid and type of well formation. Formulae are presented for the above relationships with charts based on experimental data obtained from performances of different kinds of turbo-bits used in drilling different formations.

Institution: None

Submitted : No date

Subject : USSR/Mining AID P - 3815

Card 1/1 Pub. 78 - 3/25

Authors : Bulakh, G. I., M. T. Gusman and A. I. Kolemasov

Title : Method of proper selection of turbodrills and their most efficient operation

Periodical : Neft. khoz., v. 33, #11, 14-22, N 1955

Abstract : In order to ascertain the most effective conditions for turbodrill work, the author presents graphical charts in which for different types of turbodrills the relationships of varied parameters essential to drill performance are plotted (pressure and its changes, pumps discharge, drill rotating speeds, etc.). 2 references, 1943 and 1955.

Institution : None

Submitted : No date

BULAKH, G.I.

Realization of forces exerted on the borehole bottom in turbodrilling.
Neft.khoz.34 no.6:16-20 Je '56. (MIRA 9:9)
(Oil well drilling)

BULAKH, G. I.

GAYVORONSKIY, Al'bert Anatol'yevich; BULAKH, G.I., redaktor; KOVALEVA, A.A., vedyshchiy redaktor; MUKHINA, E.A., tekhnicheskiy redaktor.

[The struggle with loss of drilling fluids in well drilling; a lecturer's manual] Bor'ba s ukhodom promyvochnoi zhidkosti pri burenii skvazhin; v pomoshch' lektoru. Moskva, Gos.nauchno-tekhn. izd-vo neft.i gorno-toplivnoi lit-ry, 1957. 35 p. (MLRA 10:4)
(Oil well drilling fluids)

BULAKH, G.I

IOANNESYAN, R.A.; BULAKH, G.I.

The essence of accelerated systems of turbodrilling. Neft.khoz. 35 no.3:7-13 Mr '57. (MLRA 10:4)
(Turbodrills) (Oil well drilling)

PHASE I BOOK EXPLOITATION SOV/1541

11(4)

Bulakh, Georgiy Ivanovich

Teoriya protsessa turbinnogo bureniya (Theory of Turbodrilling) Moscow, Gostoptekhizdat, 1958. 127 p. 3,150 copies printed.

Ed.: N.I. Buyanovskiy; Exec. Ed.: Ye. A. Petrova; Tech. Ed.: E.A. Mukhina

PURPOSE: This book is intended for the engineering and technical personnel of the oil and gas industry.

COVERAGE: The book is devoted to an examination of the theory of turbodrilling. The author discusses factors pertinent to increasing drilling efficiency, methods of utilizing the reserve power of installations for drilling deeper wells, and the use of cone-and-roller bits of smaller diameter than is usual. In preparing the book, material was drawn from the works of P.P. Shumilov, R.A. Ioannesyan, M.G. Gusman, L.A. Shreyner, and V.S. Fedorov. There are 71 diagrams and 23 tables. There are no references.

1/3

Theory of Turbodrilling SOV/1541

AVAILABLE: Library of Congress

Card 3/3

MM/ksv
5-12-59

11(0)

AUTHOR: Bulakh, G.I. SOV/93-58-11-2/15

TITLE: Prospects of Drilling Deep Wells and Small-Diameter Wells by the Turbine Method (Perspektivy turbinnogo bureniya glubokikh skvazhin i skvazhin umen'shennogo diametra)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 11, pp 7-17 (USSR)

ABSTRACT: The prospects of drilling deep wells and small-diameter wells by the turbine method were examined and the basic laws of the turbine drilling process were presented. The hydraulic feed to the bottom hole is presented by

$$G_z = \frac{P_n Q}{7.5} - \frac{\gamma (a_I + a_I + a_{II} L) Q^3}{7.5}$$

horsepower, where P_n is the pressure developed by the pumps, Q - the work fluid consumption, γ - the specific gravity of the fluid, a_I - the coefficient of hydraulic resistance in the manifold and bit, a_{II} - the coefficient of hydraulic resistance in the drill pipes, tool joints, and annular space, and L - the rated depth of the well. The hydraulic characteristic of the rig and well described by this formula is graphically presented by Fig. 1 which shows that the maximum value of curve $G_z = f(Q)$ is at a point at which according to P.P. Shumilov the bottom hole receives 2/3 of the hydraulic pump power. The hydraulic power consumption at G_z maximum is expressed by $Q_t = \sqrt{\frac{P_{dop}}{3\gamma(a_I + a_{II} L)}}$, and the coefficient of pump power transmission to the bottom hole by $\eta = 2/3$. To attain this

Card 1/3

power the turbine must satisfy the requirements expressed by the following formula $\frac{2}{3}\ \frac{P_{dop}\ Q_t}{7.5} = \frac{\gamma\ czQ_t3}{7.5}$, where c is the turbine design factor in sec^2/cm^5, P_{dop} - the permissible pressure on the pumps, z - the number of turbine stages, and Q_t - the working fluid consumption at G_z maximum. The required number of stages for the turbine is calculated from formulas (2) and (3) and expressed as follows: $z_t = \frac{2(a_I \pm a_{II}L)}{c}$. Maximum hydraulic power is obtained through the employment of turbines with a suitable number of stages for each depth interval of the well (Fig. 2). The optimum operating conditions for a turbodrill are at the highest ratio of torque to moment (M_o: n_o) developed by the turbine. This ratio was obtained from the theory of axial turbines and is expressed as follows:

$$\frac{M_o}{n_o} = 0.0031\ d_{sr}^2 \times \frac{1}{c_o} \sqrt{P_{dop}\ (a_I + a_{II}L)\gamma}.$$

The optimum drilling depth for existing turbodrills is determined with the aid of the following formula $L_o = \frac{c_o z_o - 2a_I}{2a_{II}}$, where the value of c is derived from the theory of axial turbines, and z - the number of stages of existing turbines.

Card 2/3

Table I lists the optimum drilling depth for turbodrills with turbines of varying number of stages. Table 2 presents the improved drilling results obtained through increasing the hydraulic power on the bottom hole, the ratio of M_0: n_0, and the coefficient of power transmission to the bottom hole. It is concluded that the drilling of deep wells and small-diameter wells by the turbine method can be markedly improved by observing the requirements presented in this article. Additional improvements in drilling results will be obtained through the employment of Nos. 8, 9, 10, and 11 bits (Fig. 3), special drilling pipe (Table 3), and turbines of higher pressure head. The Pavlovskiy Machinery Plant is already preparing experimental TS2-6 5/8" turbodrills with turbines of high pressure head and the VNIIBT Experimental Plant is preparing five turbines with stages of reduced height for testing at the Kursk Magnetic Anomaly Deposit. The VNIIBT Institute has also prepared experimental rubber stabilizers designed to eliminate twistoffs of the drill column. These will be tested in the Pervomayburneft' Trust and the Kuybyshev Sovnarkhoz. It is concluded that turbine drilling has great possibilities for the future. There are 3 figures and 3 tables.

IOANNESYAN, R.A.; BULAKH, G.I.

Means for increasing technical and economic indices of extradeep-well turbodrilling. Neft. khoz. 36 no.6:1-4 Je '58.

(MIRA 11:9)

(Oil well drilling)

BULAKH, G.I.

Prospects for turbodrilling deep and small-diameter wells. Neft. khoz. 36 no.11:7-17 N '58. (MIRA 11:12)
(Oil well drilling)

ABRAMOV, F.A. (Dnepropetrovsk); BOYKO, V.A. (Dnepropetrovsk); BULAKH, G.I. (Dnepropetrovsk)

Using rapid electronic computers for calculations of mine ventilation. Izv. AN SSSR. Otd. tekh. nauk. Met. i gor. delo no.2:161-168 Mr-Ap '63. (MIRA 16:10)

BARSHAY, G.S.; BULAKH, G.I.; GUSMAN, M.T.

Use of jet bits in turbodrilling. Neft.khoz. 39 no.1:8-13 1 Ja '61. (MIRA 17:3)

YUN'KOV, A.A. [IUn'kov, IU.A.]; BULAKH, G.I. [Bulakh, H.I.]

Gravity anomaly over a parabolic cylinder. Dop. AN URSR no.11: 1473-1477 '63. (MIRA 17:12)

1. Dnepropetrovskiy gornyy institut.

YUN'KOV, A.A. [IUn'kov, IA.A.]; BULAKH, G.I., [Bilakh, H.I.].

Gravity anomaly V_{xz} ove anticlinal and synclinal structures in the earth's crust. Dop. AN URSR no.1:45-48 '65. (MIRA 18:2)

1. Dnepropetrovskiy gornyy institut. Predstavleno akademikom AN UkrSSR S.I. Subbotinym.

YUN'KOV, A.A. [IUn'kov, IA.A.]; BULAKH, G.I. [Bulakh, H.I.]

Gravity anomaly V_{xx} over anticlinal and synclinal structures in the earth's crust. Dop. AN URSR no.9:1167-1171 '65.

(MIRA 18:9)

1. Dnepropetrovskiy gornyy institut.

BULAKH, KIRILL GLEBOVICH

BULAKH, Kirill Glebovivh, inzhener-kapitan-leytenant; TONKOV, A.A., red.; MEDNIKOVA, A.N., tekhn.red.

[Preserve the glory of the fatherland at battle stations] Na boevom postu khrani otchizny slavu. Moskva, Voen.izd-vo M-va obor. SSSR, 1957. 69 p. (MIRA 11:2)
(Russia--Navy)

BULAKH, N.I.

BULAKH, N. I.

Bending testing-machine for gray-iron abrasives. Zav.lab.21 no.6: 741-742 '55. (MLRA 8:9)

1. Kutaisskiy avtomobil'nyy zavod.
(Grinding wheels) (Abrasives--Testing)

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

2

*On the Rate of Transformation in Magnesium–Cadmium Alloys in the Region of the Compound MgCd. N. I. Stepanov and S. A. Bulah (*Doklady Akademii Nauk S.S.S.R.*, 1935, 4, (3), 139–142 (in Russian); and *Compt. rend. Acad. Sci. U.R.S.S.*, 1936, [N.S.], 4, (3), 147–151 (in French)).—The alloys tested contained 48·0–52·8 atomic-% magnesium. After quenching from 320° C. the rate of transformation at 100° C. into the modification stable at low temperatures was a maximum with the compound MgCd and decreased with addition of excess of either component.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TSEYDLER, Aleksandr Al'bertovich, prof. doktor; SMIRNOV, V.I., prof., doktor; DIOMIDOVSKIY, D.A., prof.-doktor; DOBROKHOTOV, G.N., kand. tekhn. nauk; BULAKH, S.A., kand. tekhn. nauk; GURIMA, N.V., red.; SMOLDYREVA, L.G., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. red.

[Metallurgy of copper and nickel] Metallurgiia medi i n kelia. Moskva, Gos. nauchno-tekh. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1958. 391 p. (MIRA 11:8)

1. Deystvitel'nyy chlen Akademii nauk KazSSR (for Smirnov).
2. Leningradskiy gornyy institut; kafedra metallurgii tyazhelykh i blagorodnykh metallov (for Diomidovskiy, Dobrokhotov, Bulakh).
(Copper--Metallurgy) (Nickel--Metallurgy)

TSIGLER, V., kand.tekhn.nauk; BULAKH, V., inzh.; CHERKASOV, A., inzh.

Using kaolin daub in combustion chamber diffusors of auxiliary marine boilers. Mor. flot 23 no.5:31-33 '63. (MIRA 16:9)

1. Nachal'nik laboratorii Ukrainskogo nauchno-issledovatel'skogo instituta ogneuporov (for TSigler). 2. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Bulakh). 3. Sluzhba sudovogo khozyaystva Chernomorskogo parokhodstva (for Cherkasov).
(Boilers, Marine—Maintenance and repair)

BULAKH, S.A., inzh.

Enriching crushed stone from ground level in DBK-20 classifiers.
Stroi. mat. 11 no.2:37-38 F '65. (MIRA 18:3)

BELYAYEV, B.Ye., inzh.; BULAKH, V.F., inzh.; VOLOKH, Yu.G., inzh.;
EVENTOV, I.M., inzh.

Unit for preparing road emulsions. Stroi. i dor. mash. 10
no.9:11-13 S '65. (MIRA 18:10)

BULAKH, VLADIMIR LEONT'YEVICH DECEASED 1964

C.'63

Hydrology

TSIGLER, V.D.; BULAKH, V.L.; KHOROLINSKIY, Yu.M.

Lightweight kaolin bricks in heating furnaces. Kuz.-shtam. proizv. 3 no.8:38-39 Ag '61. (MIRA 14:8)
(Furnaces, Heating) (Firebrick)

BULAKH, V.L.

Refractory articles for marine boilers. Standartizatsiia 28 no.3:47-48 Mr'64. (MIRA 17:5)

TSIGLER, V.D.; BULAKH, V.L.; TARASOVA, T.Ye.

Methods of determining the slag resistance of ladle firebrick. Ogneupory 30 no.12:31-34 '65. (MIRA 18:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.

TSIGLER, V.D.; BULAKH, V.L.; KOVAL'CHUK, Ye.I.; LEVENTSOV, V.I.

Rammed lining of blast furnace nozzles and tuyeres. Stal' 25 no.12:1078 D '65. (MIRA 18:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov i zavod "Zaporozhstal'".

BULAKH, V. N.

BULAKH, V. N.: "Investigation of the process of covered cold extrusion as a method of preparing matrices for stamping forms". Minsk, 1955. Min Higher Education USSR. Belorussian Polytechnic Inst imeni I. V. Stalin. (Dissertations for the degree of Candidate of Technical Sciences.)

SO: Knizhnaya Letopis' No. 50 10 December 1955. Moscow.

BARANOVSKIY, M.A., kand.tekhn.nauk; BULAKH, V.N., kand.tekhn.nauk

Selecting lubricants for reverse cold extrusion of steel. Mash. Bel. no.6:52-55 '59. (MIRA 13:6)
(Extrusion (Metals)) (Metalworking lubricants)

BULAKH, V.N.

p.2

PHASE I BOOK EXPLOITATION SOV/4851

Bel'skiy, Yevgraf Iosifovich, and Vladimir Isidorovich Kazachenok

Spravochnoye posobiye kuznetsa-shtampovshchika (Die-Forging Operator's Manual) Minsk, Gosudarstvennoye izdatel'stvo BSSR, Redaktsiya nauchno-tekhnicheskoy literatury, 1960. 489 p. 5,000 copies printed.

Eds.: R. Tomilin and F. Kashtanov; Tech. Ed.: N. Stepanova.

PURPOSE: This book is intended for foremen and operators in the die-forging industry. It may also be used by students majoring in die forging at secondary and higher schools of technical education.

COVERAGE: The book contains basic information on the production of die forgings, the design and use of tools, and forging-plant equipment. The authors also give data on materials used in the forging industry. Problems connected with the introduction of new, advanced die-forging methods and other problems

Card 1/8

encountered in the die-forging industry and discussed. Chapters XII and XIII were written by V. N. Bulakh, Candidate of Technical Sciences. No personalities are mentioned. Soviet references accompany each chapter.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TS225.B38)

Card 8/8

VK/wrc/os
3/22/61

BULAKH, Ye. G.

4073 BULAKH, Ye. Go

Ispol'zovanie metoda setok v interpetatsii anomaliy gorizontal'nogo gradienta sily tyazhesti. Dnepropetrovsk. 1954 12 s. 19 sm. (M-vo vyssh obrazovaniya SSSR. Glav. upr. Gorno-metallurgich. i stroit, vuzov. Dnyeproietr. ordena Trkhd. Krashogo Znameni Gornyy in-t im. Artema. Kafedka. Geofiz. Metodov razvedki). 100 ekz. B. ts. - (54-56895)

BULAKH, Ye. G.

"Use of the Grid Method in the Interpretation of Anomalies in the Horizontal Gradient of the Force of Gravity." Cand Tech Sci, Chair of Geophysical Methods of Prospecting, Dnepropetrovsk Order of Labor Red Banner Mining Inst imeni Artem, Main Administration of Mining, Metallurgical, and Construction Vuzes, Min Higher Education USSR, Dnepropetrovsk, 1954. (KL, No 3, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational
SO: Sum. No 598, 29 Jul 55

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307420006-9"

BULAKH, Ye. G.

AUTHOR: Bulakh, Ye. G. 49-4-13/23

TITLE: A further criterion for verifying the interpretation of gravitational anomalies. (Yeshche odin kriteriy dlya proverki interpretatsii gravitatsionnykh anomaliy).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.4, p.522 (USSR)

ABSTRACT: Lyapunov, A.A. (Ref.1) and Smolitskiy, Kh.L. (Ref.2) dealt with criteria for verifying the interpretation of gravitational anomalies which are applicable to anomalies in Δg. In this one page communication a further criterion is established for verifying the interpretation of V_{xz} anomalies for two-dimensional bodies, Eq.5. There are 1 figure and 2 Slavic references.

SUBMITTED: August 7, 1956.

ASSOCIATION: Dnepropetrovsk Mining Institute. (Dnepropetrovskiy Gornyy Institut).

AVAILABLE: Library of Congress.

Card 1/1

BULAKH, YE.G.

BULAKH, Ye.G.

Determining the contact surface of a formation. Razved.i okh.nedr 23 no.2:58-59 F '57. (MLRA 10:5)

1. Dnepropetrovskiy gornyy institut.
(Prospecting--Geophysical methods)

BULAKH, YE. G.

49-9-8/13

AUTHOR: Bulakh, Ye. G.

TITLE: On certain criteria for verifying the interpretation of gravitational and magnetic anomalies. (O nekotorykh kriteriyakh dlya proverki interpretatsii gravitatsionnykh i magnitnykh anomaliy).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.9, pp. 1173-1176 (USSR)

ABSTRACT: Lyapunov, A.A. (Ref.1), Smolitskiy, Kh.L. (Ref.2) and Bulakh, Ye. G. (3) derived criteria for verifying the interpretations of gravitational anomalies. On the basis of similar assumptions it is possible to obtain also other criteria for verifying interpretations of gravitational as well as magnetic anomalies which, from the practical point of view, are of greater interest. In this short communication only the case of logarithmic potential is considered, dealing in para.1 with the criteria for verifying interpretation anomalies Δg, in para. 2 with the criteria for verifying the interpretation of V_{xz} anomalies and in para.3 with criteria for verifying the interpretation of magnetic anomalies. There are 1 figure and three Slavic references.

Card 1/2

On certain criteria for verifying the interpretation of gravitational and magnetic anomalies. 49-9-8/13

SUBMITTED: April 5, 1957.

ASSOCIATION: Dnepropetrovsk Mining Institute imeni Artem. (Dnepropetrovskiy Gornyy Institut im. Artema).

AVAILABLE: Library of Congress

Card 2/2

BULAKH, YE. G.

AUTHOR: Bulakh, Ye.G. 49-12-10/16

TITLE: Interpreting Δg Anomalies by means of a Direct Method (Ob interpretatsii anomaliy Δg pryamym metodom)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.12, pp. 1512 - 1514 (USSR)

ABSTRACT: A.A.Lyapunov [Ref.1] and Kh.L. Smolitskiy [Ref.2] established criteria for verifying the interpretations of gravitational anomalies. The author of this paper established additional criteria and utilised the obtained formulae for determining the co-ordinates of a centre of a region with an anomalous mass and for a known excess density, he established the area of the cross-section of two-dimensional bodies. The derived formulae permit utilising any finite interval of the detected anomaly. It is pointed out that the derivation of the formulae is not strictly accurate and, therefore, the proposed method must be verified carefully in practical applications. There are 2 Slavic references.

ASSOCIATION: Dnepropetrovsk Mining Institute im. Artem. (Dnepropetrovskiy Gornyy Institut im. Artema)

SUBMITTED: July 2, 1956

AVAILABLE: Library of Congress.

Card 1/1

AUTHORS: Yun'kov, A.A. and Bulakh, Ye.G. SOV/21-58-11-19/28

TITLE: On Precision of Density Determination of Anomalous Masses by the Grid Method (O tochnosti opredeleniya plotnosti anomal'nykh mass metodom setok)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 11, pp 1234-1237 (USSR)

ABSTRACT: In a previous paper [Ref 2], the authors showed that the study of distribution of a surplus or deficiency of density in the subsurface is reduced to the solution of a system of linear equations. In the present article, the authors consider the problem of the precision of the determination of subsurface surplus masses by the method of grids. They establish a criterion of precision for determining surplus density when it is constant for every square of the grid. The problem of the choice of grid elements and the coordinates of the selected points is considered in the article from the viewpoint of insuring the necessary precision in determining surplus masses.

Card 1/2 There are 2 Soviet references.

SOV/21-58-11-19/28

On Precision of Density Determination of Anomalous Masses by the Grid Method

ASSOCIATION: Dnepropetrovskiy gornyy institut imeni Artëma (Dnepropetrovsk Mining Institute imeni Artëm)

PRESENTED: By Member of the AS UkrSSR, V.G. Bondarchuk

SUBMITTED: June 2, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

Card 2/2

3(6)

SOV/21-59-5-6/25

AUTHOR: Bulakh, Ye.G.

TITLE: On One Approximate Method of Determining the Surplus Mass and Depth of a Two-Dimensional Body for Δg Anomalies

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1959, Nr 5, pp 482-484 (USSR)

ABSTRACT: Furthering the interpretation of gravitation anomalies contained in works by A.A. Lyapunov /Ref. 1/ and Ye.G. Bulakh /Ref. 2/, the author formulates correlations

$$\int_a^l g\,dx = 2K\varphi(x_0, z_0)\iint_s \sigma\,ds \quad (2)$$

$$Q = 4KM \operatorname{arc\,tg} \frac{l}{z_0} \quad (3)$$

$$Q = 4KM \operatorname{arc\,tg} \frac{l_1}{z_0} \quad (4)$$

$$z_0^2 = \frac{l^2 l_1}{l_1 - 2l} \quad (5)$$

Card 1/2

SOV/21-59-5-6/25

On One Approximate Method of Determining the Surplus Mass and Depth of a Two-Dimensional Body for Δg Anomalies

for determining the depth of an anomalous body and its surplus mass for symmetrical Δg anomalies. If the surplus mass is known, the cross section area can also be determined. (a and b are arbitrary points on axis 0x; k is gravitational constant; σ is surplus density of anomalous mass that fills up a closed space S; $\varphi(x,z)$ is an angle of visibility of segment (a,b) from a point of examination; x_0, z_0 are points; M is surplus mass of a length unit of anomalous body. Other designations are standard mathematical). There is 1 sketch and 2 Soviet references.

ASSOCIATION: Institut gornogo dela AN UkrSSR imeni M.M. Fedorova (Institute of Mining of the AS UkrSSR imeni M.M. Fedorov)

PRESENTED: By V.G. Bondarchuk, Member of the AS UkrSSR

SUBMITTED: December 23, 1958

Card 2/2

27054

S/021/60/000/005/010/015
D210/D304

3,1900 (1057,1538)

AUTHOR: Bulakh, Ye. H.

TITLE: Generalization of certain criteria for verifying interpretations of gravitational anomalies

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 5, 1960, 630-633

TEXT: The author derives criteria for verifying interpretations of gravitational anomalies due to three-dimensional bodies of arbitrary shape. The author considers a three-dimensional space with a finite region D where the density has an "excess" value $\sigma_{(x;\ y;\ z)}$. The gravitational potential at points outside the region D is given by

$$V_{(\xi;\,\eta;\,\zeta)} = k \iiint_D \sigma_{(x;\,y;\,z)} \frac{1}{R}\, dv,$$

where k is the gravitational constant, $R = \sqrt{(x-\xi)^2 + (y-\eta)^2 + (z-\zeta)^2}$ is the distance between a point $(\xi;\ \eta;\ \zeta)$ lying outside the region D and a point $(x;\ y;\ z)$

Card 1/4

27054
S/021/60/000/005/010/015
D210/D304

Generalization of certain...

inside D. The author takes a plane S outside D and assumes that values of the functions Δ g and $V_{\xi\zeta}$ are known on this plane. The origin of the xyz coordinates is taken in the plane S and the axis Oz is taken normal to S. The author considers first the anomaly Δ g on the plane S

$$\Delta g = -\frac{\partial V}{\partial \zeta_{(\xi;\, \eta;\, 0)}} = -k \int\int_D\int \sigma \frac{\partial}{\partial \zeta}\left(\frac{1}{R}\right) \delta v. \qquad (1)$$

If $\mu = \mu(\xi; \eta; \zeta)$ is some function defined outside D, then the criteria for Δ g in geometrical form are, for $\mu = 1$:

$$\int_a^b g\, d\xi = k \int\int_D\int \sigma \left[\frac{\cos\gamma_2 \cos\alpha_2}{\sin^2\alpha_2 R_{(b)}} - \frac{\cos\gamma_1 \cos\alpha_1}{\sin^2\alpha_1 R_{(a)}}\right] dv. \qquad (5)$$

and for $\mu = \xi$:

(see next card)

Card 2/4

$$\int_a^b \xi g d\xi = k \int\int_D\int \sigma\left[\cos\gamma_2 - \cos\gamma_1 + x\left(\frac{\cos\gamma_2\cos\alpha_2}{\sin^2\alpha_2 R_{(b)}} - \frac{\cos\gamma_1\cos\alpha_1}{\sin^2\alpha_1 R_{(a)}}\right)\right]dv. \quad (7)$$

where ab is an intercept along the ξ axis in the $\zeta = 0$ plane (the plane S); $R_{(a)}$ and $R_{(b)}$ are radius vectors between the points a and b and between a point M in the region D; α_1, β_1, γ_1 and α_2, β_2, γ_2 are, respectively, the angles which $R_{(a)}$ and $R_{(b)}$ make with the coordinate axes x, y, z. The author considers also the anomalies of $V_{\xi\zeta}$ and obtains, for $\mu = 1$

and for $\mu = \xi$

$$\int_a^b V_{\xi\zeta} d\xi = k \int\int_D\int \sigma\left[\frac{\cos\gamma_2}{R^2_{(b)}} - \frac{\cos\gamma_1}{R^2_{(a)}}\right]dv. \quad (10)$$

27054

Generalization of certain... S/021/60/000/005/010/015
D210/D304

$$\int_a^b \xi V \, d\xi = k \int\int_D\int \sigma \left[\frac{\cos\gamma_2}{R_{(b)}^2} \left(\frac{x}{R_{(b)}} + \frac{\cos^3\alpha_2}{\sin^2\alpha_2} \right) - \frac{\cos\gamma_1}{R_{(a)}^2} \left(\frac{x}{R_{(a)}} + \frac{\cos^3\alpha_1}{\sin^2\alpha_1} \right) \right] dv. \quad (12)$$

There are 1 figure and 2 Soviet-bloc references.

ASSOCIATION: Instytut hirnychoyi spravy AN URSR (Mining Institute, AS UkrSSR)

PRESENTED: by Member AS UkrSSR V.H. Bondarchuk

SUBMITTED: May 12, 1959

Card 4/4

3.9110

26984 S/049/60/000/012/008/011
D214/D305

AUTHOR: Bulakh, Ye.G.

TITLE: The use of an electronic computer for interpreting gravitational and magnetic anomalies

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya geofizicheskaya, no. 12, 1960, 1778 - 1781

TEXT: The author discusses the three basic trends in using a computer for the quantitative interpretation of the anomalies. The first is in calculating the various data for interpretation, an example of which is the anomaly. Using the integral criterion

$$\int_a^b x \frac{d^2 g}{dx^2}\, dx = 4k \iint_S \sigma z F(x, z)\, dS, \tag{3}$$

$$F(x, z) = \int_a^b \xi \frac{3(x-\xi)^2 - z^2}{[(x-\xi)^2 + z^2]^2}\, d\xi.$$

Card 1/2

BULAKH, Ye.G.; YEVSIKOVA, L.G.

One integral method of interpreting gravity and magnetic anomalies. Izv. AN SSSR Ser. geofiz. no.1:90-94 Ja '62.
(MIRA 15:2)

1. AN USSR, Institut gornogo dela.
(Gravity prospecting)
(Magnetic prospecting)

BULAKH, Ye.G.

Practical method for estimating the surplass mass and depth of a two-dimensional bφdy by Δg anomalies. Geofis.sbor. no.2:23-27 '62. (MIRA 16:3)

1. Institut gornogo dela AN UkrSSR.
(Gravity anomalies)

BULAKH, Ye.G.

Determining the extra mass and depth of a two-dimensional body according to the gravitational anomaly. Izv. AN SSSR. Ser. geofiz. no.4:534-537 Ap '62. (MIRA 15:4)

1. AN USSR, Institut gornogo dela im. M.M.Fedorova.
(Gravity prospecting)

BULAKH, Ye.G. [Bulakh, E.H.]

Estimation of the depth and excess mass of a two-dimensional body according to the Δg-anomaly excluding error in determining the normal field. Dop. AN URSR no.9:1190-1193 '62. (MIRA 18:4)

1. Institut gornogo dela AN UkrSSR.

BULAKH, Ye.G.

Interpreting gravity anomalies complicated by local influences. Izv. AN SSSR. Ser. geofiz. no.9:1215-1218 S '62. (MIRA 15:8)

1. AN Ukrainskoy SSR, Institut gornogo dela imeni M.M.Fedorova.
(Gravity prospecting)

BULAKH, Ye.G. [Bulakh, IE.H.]; YEVSIKOVA, L.G. [IEvsikova, L.H.]

Anomaly of the gravity of a hyperbolic dome limited along the vertical. Dop. AN URSR no.5:596-599 '64. (MIRA 17:6)

1. Predstavelno akademikom AN UkrSSR S.I.Subbotinym.

L 11377-65 EWT(1)/EWG(v) Po-4/Pe-5/Pq-4/Pg-4 ESD(dp)/ESD(t)/SSD/AFWL/AFETR GW

ACCESSION NR: AP4043908 S/0049/64/000/008/1221/1222

AUTHOR: Bulakh, Ye. G., Konstantinov, S. V.

TITLE: A computer for solution of the direct problem in gravimetric prospecting 18 B

SOURCE: AN SSSR. Izvestiya. Seriya geofizicheskaya, no. 8, 1964, 1221-1222

TOPIC TAGS: gravimetry, gravimetric prospecting, geological prospecting, specialized computer, geophysics

ABSTRACT: It is generally accepted that analog computers used for the interpretation of gravity anomalies should meet the following requirements: 1. the parameters of the modeled body should be easily changeable; 2. computation of the field should be done quite rapidly 3. the feedout of the results should be in a form in which the computed and observed anomalies are compared easily and rapidly; 4. the apparatus should be simple, reliable and easy to handle, This article describes a computer which in large part meets these requirements. In contrast to other machines, this one is based largely on decision elements. The first model was constructed for computation of V_{xz} anomalies over two-dimensional bodies. The disturbing body is approximated by the sum of a certain number of blocks. If it is taken into account that the excess density in each block can be different,

6

it is possible to describe a mass with a variable density in sufficient detail. The value V_{xz} for a block at an arbitrary point A is determined using the formula

$$V_{xz} = k\sigma \ln \frac{(x_1^2 + H^2)(x_2^2 + h^2)}{(x_1^2 + h^2)(x_2^2 + H^2)} \quad (1)$$

where k is the gravitational constant, σ is excess density, and the values of the parameters x_1, x_2, h and H are shown in Fig. 1 of the Enclosure. In order to simplify the method and decrease the error, division and multiplication are replaced by subtraction and addition of logarithms, respectively. The decision unit does not make use of formula (1), but instead the equivalent formula

$$V_{xz} = k\sigma[\ln(x_1^2 + H^2) + \ln(x_2^2 + h^2) - \ln(x_1^2 + h^2) - \ln(x_2^2 + H^2)]. \quad (2)$$

For computation of V_{xz} anomaly over a complex body, which is approximated by several blocks, it is possible to use the scheme

$$V_{xz} = \sum_{i=1}^{k} V_{xz_i}; \quad \sum_{i=1}^{j} V_{xz_i} = V_{xz_j} + \sum_{i=1}^{j-1} V_{xz_i}, \quad j = 1, 2, \ldots, k, \quad (3)$$

where k is the number of blocks by which the disturbing masses are approximated. An

L 11377-65
ACCESSION NR: AP4043908

apparatus of this type is shown schematically in Fig. 2 of the Enclosure. There are 51 storage elements. The unit operates in such a way that there is simultaneous readout and storage, and the recording unit records the final solution in the form of a curve. Work with an experimental model of such a computer revealed that at a working frequency of 4 cps the time required for computing an anomaly of 10 blocks along a profile of 51 points required approximately 150 seconds. Orig. art. has: 3 formulas and 3 figures.

ASSOCIATION: Institut gornogo dela imeni M. M. Fedorova (Mining Institute)

SUBMITTED: 02Jul63 ENCL: 02

SUB CODE: DP, ES NO REF SOV: 005 OTHER: 000

3/5

L 11377-65
ACCESSION NR: AP4043908

ENCLOSURE: 01

0

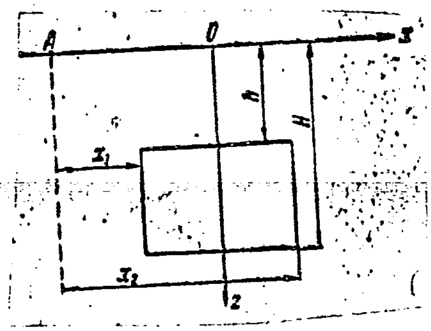

Figure 1.

Card 4/5